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16

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EXCISION OF THE EYEBALL IN CASES OF MELANOSIS,
MEDULLARY CARCINOMA, AND CARCINOMA;
WITH REMARKS.

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CARCINOMA MEDULLARE.

THIS disease is known under various names, as Carcinoma Medullare, Spongoid Inflammation, Fungus Hæmatodes, Encephaloid Tumour, &c. It is of the consistence of brain, varying in colour from that of brain to a deep reddish brown hue, according to the degree of its vascularity, or to blood being effused into its substance by the giving way of some of its vessels, and the blood being more or less decomposed. It consists of meshes of delicate fibres, in which the medullary matter is deposited.

That this disease is essentially of the same nature as cancer there can be little doubt, seeing that portions of the same tumour sometimes vary in consistence from the hardest scirrhus to that of brain, and that soft medullary growths are often met with after the removal of hard scirrhus tumours.

The soft consistence seems to be dependent in a great measure on the medullary matter being deposited in loose delicate tissue.

In five of the cases operated on, this medullary mass was deposited within the choroid, and occupied the situation of the vitreous humour. In two cases it was situated exterior to the eyeball.

This disease may occur at any age; when it affects the eye, it is commonly in early life. Mr Wardrop states that in twenty-four instances, twenty of the patients were under twelve years of age; and on four of the cases operated on by me, the patients were under eight years of age.

Although every species of carcinoma (with the exception perhaps of colloid, which has been seen in the adult only), may

occur at any age, still the different species are not equally common at all periods of life. When the morbid growth shows itself in infancy or youth, it commonly assumes the medullary form. In youth, also, the eye, the lymphatic system, and the brain, are the organs more liable to its attacks; whereas it is rarely seen till after the middle period of life in the uterus, mamma, stomach, intestines, &c. &c. Although the medullary carcinoma is even more disposed than scirrhus to implicate all surrounding parts in the disease, the skin seems to be an exception. In scirrhus the skin becomes adherent at an early period to the tumour, and takes on the cancerous ulceration; whereas in medullary carcinoma the tumour often attains an enormous size before the skin becomes adherent to it; and even after it has given way, it is not disposed to assume the characters of the cancerous ulcer, the subsequent changes which take place being in a great measure limited to the medullary tumour itself, the neighbouring skin remaining almost unaffected.

The following are the appearances which first call attention in cases of medullary carcinoma within the eyeball. The pupil is dilated and irregular in form. In all the cases which I have had an opportunity of examining, its transverse diameter was the larger. (Figs. 8 and 12.) The iris is changed in colour and texture, being usually of a reddish yellow hue, more especially towards the pupillary margin, and much reduced in thickness. In the fundus of the eye is discovered a peculiar glistening metallic appearance, like light reflected from a brazen mirror. On minute examination it is discovered that this peculiar metallic lustre is dependent on the reflection of light through the humours of the eye from the surface of a tumour deposited in the bottom of that organ, over which can sometimes be traced branches of the *arteria centralis retinae*. In this condition the disease may remain stationary for months, or even for years.

The tumour at first enlarges slowly, afterwards its progress is more rapid. The vitreous humour is gradually absorbed to make room for its advancement. It then reaches the lens, which, with the iris, are pushed closely into contact with the cornea; the chambers of the aqueous humour being thus obliterated, and the lens usually rendered opaque, and concealing the tumour behind it. At this period the sclerotic assumes a bluish black tinge, which is owing to this membrane becoming thinner from absorption, and allowing the dark colour of the choroid to shine through it. The vessels of the conjunctiva are commonly enlarged and tortuous. It is said by many authors that in this disease the eyeball enlarges to two or three times its natural size. I have never witnessed this result. I think it probable that in most instances they have been deceived by an unnatural prominence being given to the eye by infiltration of the cellular tissue of the orbit projecting the eyeball forward, thus giving it

the appearance of being augmented in bulk. The sclerotic coat is by no means disposed to yield to distention, but readily gives way by absorption, as we daily see occurring in various dropsical affections of the eye.

The tumour now projects from the eyeball either through the sclerotic in the neighbourhood of the cornea, where it is thinnest and most readily yields to absorption, in which case it retains for a time a conjunctival covering, or the cornea inflames and sloughs or ulcerates, and thus affords room for the further increase of the diseased mass.

The tumour, now no longer confined by the membranes of the eye, enlarges rapidly, and projects from between the swollen eyelids upon the cheek. (Fig. 13.) In texture it is soft, spongy, and easily lacerated. Being supplied freely with blood-vessels, the coats of which are extremely delicate and readily ruptured, the tumour not only usually assumes a dark hue from blood effused into its texture, but profuse hemorrhage ensues from spontaneous rupture of these vessels, or on the application of the slightest mechanical irritation. Coagula of blood are often found in the interior of the mass. As the disease progresses, parts of the tumour slough, others ulcerate, and the patient sinks exhausted by suffering, discharge, and bleeding. Occasionally he is carried off by a sudden profuse hemorrhage. In some instances during the progress of the disease the absorbent glands over the parotid and those of the neck swell, and in them a similar medullary matter is deposited. Tumours of the same character are not unfrequently found in other parts of the body, more especially in the viscera of the abdomen and thorax.

An appearance in the eye dependent on a totally different cause, but resembling medullary carcinoma in its early stage, is occasionally met with. It is when either pure blood or fibrine is effused from the arteria centralis retinæ into the cells of the hyaloid membrane. When blood is effused, it presents at first, when viewed in a clear light, a bright scarlet hue; but in proportion as the colouring matter of the blood is absorbed, it exhibits the peculiar metallic glistening appearance which is seen in the malignant disease. This effusion of blood into the vitreous humour may occur spontaneously, or be the result of external injury. The red colour presented in the early stage, and the sudden occurrence of the affection, will point out the difference between it and the malignant tumour.

It is more difficult to form a diagnosis between cases of effusion of fibrine into the hyaloid membrane, and the malignant tumour. In the instances of effusion of fibrine which I have witnessed, the metallic lustre, which must arise from the presence of an opaque reflecting substance deeply seated in the eye, was not so clearly marked as in the malignant disease, probably owing to the effusion being in the substance of and not posterior to the vitreous

humour; for it is found that, in proportion as the opaque reflecting body advances towards the cornea, it loses its metallic lustre. I have observed also, that, in the non-malignant affection, although the pupil was dilated, it was regular in form, and the texture and colour of the iris were not altered. In some instances, also, vision was not entirely lost, whereas, in malignant diseases, total blindness, I believe, always exists. I am at present attending a lady, twenty-six years of age, whose eye presents the lustrous metallic appearance. It is dependent on effusion of blood into the hyaloid membrane, which apparently was caused by a sudden fright. Instantaneous blindness of the affected eye followed. The effusion is gradually being absorbed, and she can now distinguish large objects. The pupil is fully but equally dilated, and there is no change in the colour or texture of the iris. The sclerotic retains its natural appearance, and no enlarged or tortuous vessels are seen on the conjunctiva. The importance of a correct diagnosis in such cases is sufficiently evident.

The operations which have been performed for the cure of the medullary carcinoma in the eye have almost, without exception, proved unsuccessful, the disease returning within the period of two years from the date of the operation. So great, indeed, has been the want of success, that it may almost be a question in how far we are justified in continuing to operate in this disease. In one case out of the five of excision for the cure of medullary carcinoma situated *within* the eyeball, the disease did not reappear. The patient, John Graham, fifty-six years of age (Fig. 16), in passing through a wood in the dark, received a severe blow in the right eye by running against a decayed branch of a tree. The blow was so severe that he fell to the ground insensible. He speedily recovered from this state, but vision was entirely lost in that eye, and has continued so ever since the accident. The inflammation which followed yielded to leeching and warm fomentations, and the eye recovered its original appearance, with the exception of a dilated state of the pupil. The accident occurred in the autumn of 1818; in the month of June 1824 he began to suffer from a feeling of fulness and distention of the eyeball, and an occasional throbbing pain in the temple and forehead. In August it was first observed that the pupil had assumed a yellowish metallic colour. In October the eyeball began to project from its socket. In January 1825 he placed himself under my care. On examining the eye the cornea was opaque, and the vessels of the conjunctiva enlarged and tortuous. The form of the eyeball was irregular, and the cornea much more conical than natural. On its centre was a deep ragged ulcer passing through all its laminae, and the bottom of the ulcer was occupied by a soft pultaceous mass, through which the probe passed readily into the interior of the eyeball. His health was failing from constant suffering and

loss of appetite and sleep. The pain he described as occasionally of a burning, at other times of an excruciating lancinating character, extending to the temple and forehead, and sometimes to the occiput. On the 18th January 1825, I removed the contents of the orbit. On introducing my finger after the excision of the eyeball, to ascertain the condition of the parts, I found that the greater part of the orbital plate of the frontal bone had been absorbed, so that the finger lay in contact with the membranes of the brain,—a state showing the necessity of extreme caution in the use of the knife in cases of long standing and accompanied by much enlargement of the contents of the orbit. That the bone had not participated in the malignant disease, but that it had been removed by simple absorption, is sufficiently demonstrated by the favourable result of the case, and by all the parts removed exterior to the sclerotic being free from the disease.

This patient made a rapid recovery, without a single untoward symptom. In 1836, eleven years after the operation, he was in good health, since which time I have not heard of him. On making a section of the eyeball the following appearances presented themselves (Fig. 15):—

The whole of the eyeball was filled by a soft mass lying within the choroid; it was of an opaque white colour, and when submitted to the microscope presented all the characters of the carcinoma fasciculatum. There was no trace of the lens; the cornea was ulcerated at its centre, through which ulcer the tumour slightly protruded.

In all the other cases, as I have stated, the disease returned in the orbit, and in all presented the same appearances; the socket becoming filled by a soft medullary mass, accompanied by fetid discharge and more or less bleeding. Elizabeth Williamson died three months after the operation; Jane Macpherson lived five months; Peter Johnston, eleven months; and John Richardson, eight months.

SCIRRHUS.

Scirrhus is described by most authors on ophthalmology as in many instances originating in the eyeball itself, commencing with severe pain in the eye and head, followed by dimness of sight, and at last total blindness, the eyeball becoming indurated and misshapen, the sclerotic of a dirty yellow colour and irregularly prominent, and the superficial vessels enlarged and varicose. That the disease subsequently extends to the surrounding parts, the conjunctiva ulcerates, and the ulceration passes from one tissue to another. That on making a section of the eyeball after its removal, the sclerotic is found thickened, cartilaginous, and intersected with white bands, and the place of the vitreous humour occupied by a mass of a somewhat less firm consistence, and divided by similar membranous septa.

I have never met with this form of disease either in my own practice or in that of others. Indeed, I am disposed to think that the ordinary form of scirrhus is seen only in the lachrymal gland, cellular tissue, conjunctiva, and integuments of the eyelids. That the sclerotic not only does not give origin to scirrhus, but is remarkable for resisting cancerous infiltration from neighbouring parts, as is shown in cases in which carcinoma exists on each side of that membrane, it remaining untouched. We even find the sclerotic divided into two laminæ by carcinomatous matter, these laminæ remaining unaffected by the disease. When the carcinomatous deposit occurs in the interior of the eyeball, it is invariably of a soft medullary consistence.

Although in most instances of carcinoma there exists a constitutional disposition to the affection, yet there can be as little doubt that in many cases the disease is entirely local in its origin, and that the general system only subsequently becomes contaminated if it be allowed to proceed. This more particularly holds good in regard to the skin. Hence the numerous cases of perfect cure effected in carcinoma of the lip, when excision is had recourse to in an early stage. I believe that the operations for the cure of cancer of the eyelids would be equally successful with those performed on the lip, were they resorted to sufficiently early, and less care taken to save the surrounding parts to avoid the subsequent disfigurement. Much difficulty, however, is necessarily experienced in gaining the consent of the patient to a comparatively formidable operation for the cure of an apparently trivial disease.

The probability of success in operating will be greatest where no firm connexion has been formed between the diseased parts and the subjacent bone, where the constitution of the patient is otherwise good, and where the operator uses his knife with sufficient freedom. Again, where there is a strong constitutional disposition to the disease, often indicated by the appearance of the patient, when the disease commences without the application of any external cause, and where the surrounding tissues are adherent to the diseased part, the chances of success will necessarily be much lessened.

Scirrhus, in so far as I have had an opportunity of witnessing the disease, most frequently commences in the lower eyelid, at its margin, and generally near the external canthus. Why the lower eyelid and lower lip are more subject to scirrhus than the upper eyelid and upper lip, seeing they are so similar in structure and function, it is impossible for us in the present state of our knowledge to determine.

Scirrhus commonly first shows itself on the eyelid in the form of an indurated warty-looking excrescence, at other times in the form of a hard indurated swelling, of small size, usually of a dusky reddish brown hue, and resting on a broad firm basis ;

and in either of these conditions the disease, if not irritated, may remain for years. When irritated by being rubbed or scratched by the patient, or by the stimulating applications or the lancet of the surgeon, their progress becomes more rapid. They increase in bulk, a thin discharge takes place, which dries into a scab, under which ulceration proceeds, the scab falling off from time to time and being again renewed. The ulcer gradually enlarges, and the edges are usually elevated, hard, and jagged. Often there is a sensation of burning heat, and occasionally, though rarely, of lancinating pain. The indurated base extends in all directions, to which the ulceration slowly spreads. The discharge may be thin and offensive, or of a healthy purulent character, and occasionally tinged with blood. The eyelid is now found to be firmly attached to the subjacent periosteum and bone, and the diseased structure extends much beyond what is apparent to the eye. At this period it is said that large fungous excrescences, with profuse discharge and hemorrhage, occur. These I have not witnessed. We sometimes see a temporary cicatrization, but it does not present a healthy natural appearance, soon gives way, and the ulceration again proceeds in its course. The ulceration extends to the conjunctiva, which becomes firmly attached to the subjacent sclerotic; the cornea now inflames and ulcerates, the humours of the eye are discharged, and the globe now sinks in the socket, which presents a cavity overspread by the cancerous ulceration, the sclerotic coat generally remaining to the last (Fig. 20). The glands over the parotid and under the jaw seldom swell or take on the same malignant action. The discharge increases in quantity, at last the patient sinks exhausted, and often in a comatose state. Generally, but by no means invariably, the sufferings of the patient during the course of the disease are comparatively trifling. The progress of the ulcer is usually very slow, sometimes being of small extent even at the expiry of ten, fifteen, or twenty years from its commencement. In other cases it is more rapid, and makes extensive ravages, destroying all the soft parts within the orbit, and those of the cheeks and nose, and even communicating with the cavity of the mouth, presenting a most hideous aspect. (See Fig. 20.) Scirrhus in this situation, as has been justly remarked by Dr Jacob in his excellent essay (Dublin Hosp. Reports, vol. iv.), is seldom attended by lancinating pain, fungous growths, sloughs, hemorrhage, fetor, or swelling of the lymphatics.

In the treatment of this affection all local and constitutional remedies have failed in eradicating the disease, although many are useful as palliatives. I have not used escharotics or the cauter, believing them to cause infinitely more suffering to the patient and to be much less effectual than the knife. It will be seen by the tabular view, that I have operated in five cases of

carcinomatous affections of the orbital appendages. The three first presented the characters I have just described; in two of these a cure was effected, and in one the scirrhus returned.

In the first of these cases—that of James Grant, æt. sixty—the disease commenced twelve years previously, in the form of a small warty excrescence. Every kind of treatment, local and constitutional, had been tried in vain. At the period of operation there was an ulcer towards the external canthus occupying about one-third of the lower lid; at that part the tarsal cartilage had been destroyed, leaving a deep hollow through which the tears flowed and excoriated the cheek. The ulceration had extended to that part of the conjunctiva which covers the sclerotic, and almost reached the cornea. When he attempted to move the eye it had a peculiar almost rotatory motion, being bound down at the seat of the ulcer. In the early period of the disease little pain was experienced, but during the last three months his sufferings were from time to time very severe, owing to attacks of inflammation of the whole globe. The cornea was so opaque that the condition of the internal structure of the eye could not be ascertained. In compliance with the urgent request of the patient, I removed the eyeball and lower lid, carrying the incision some way down the cheek, so as to remove if possible all contaminated parts; and I scraped the periosteum from the bone at that part of the margin of the orbit seated beneath the ulcer. This patient made a perfect recovery. He visited me in perfect health four years after the operation was performed.

In the second case—John Williamson, æt. sixty-two—the disease was of four years' standing, and limited to the external half of the lower lid. The conjunctiva and globe were healthy. The eyelid at the seat of ulceration was firmly connected with the subjacent bone. I removed more than two-thirds of the eyelid and the periosteum, where it seemed to be connected with the disease. The parts assumed a healthy look, and granulation proceeded favourably during the first month; it then gradually resumed the cancerous character, and the patient refused to submit to further treatment.

In the third case—William Ross, æt. fifty—the disease was of three years' standing; the ulcer occupied about one-third of the eyelid, and was not attached to the bone. I excised about one-half of the eyelid, and the case proceeded favourably, and there has been no return of the disease.

The three following cases differ from each other and from the preceding in many important points:—

Mrs Walker, æt. sixty-two (Figs. 14 and 15), states that the left eye has been in a weak state since childhood, and that it has been the subject of repeated attacks of inflammation, but which always yielded to the usual remedies. About two years

ago she began to suffer from severe lancinating pains passing from the eye to the temple and occiput, and which have continued ever since. After the last attack of inflammation, about three years ago, a fleshy elevated ring formed round the cornea, and which remained stationary for about a year and a half; it then began slowly to enlarge, and has continued to advance in spite of leeches, blisters, mercurials, and every kind of lotion. The swelling appears to have proceeded from the margin of the cornea backwards, gradually projecting the eye from the socket. The transparency of the cornea and the functions of the retina remained unimpaired until about three months ago, when vision failed, the cornea becoming opaque, probably in consequence of the inflammation caused by the constant exposure of the eye to the air and light, the eyelids being no longer capable of closing over the eyeball, owing to its bulk, and the extent to which it was thrust forward. Her health and strength have latterly been failing under constant pain and want of sleep. After excision of the contents of the orbit she made a rapid recovery. She died from general decay, without any marked disease, twelve years after the performance of the operation.

Fig. 14 represents the appearance of the eye three months prior to the operation. The swelling continued to enlarge, and the eyeball to be farther projected from the socket. On making a transverse section of the eyeball after excision, its membranes and their contents were found perfectly healthy (Fig. 15). Exterior to the sclerotic, and under the conjunctiva, it was surrounded by a dense mass of medullary sarcoma, which, when subjected to the microscope, presented spherical cells.

Grizzel Syme, æt. fifty, states that twenty-two years ago a tumour about the size of a chestnut was removed from the orbit, under the frontal ridge, by Sir William Newbigging, and that in three weeks the wound was healed, the eye had regained its natural appearance, and the sight was good. About two years ago she observed the eye beginning to protrude, which protrusion has continued steadily to increase, the eyeball being forced downwards and outwards. Vision is very slightly impaired. She experiences little pain in the orbit, but is subject to frequent headaches. At the upper and inner part of the orbit, extending behind the eyeball, is felt part of the tumour, of firm consistence, and very slightly moveable. In consultation with my colleagues at the Hospital it was deemed expedient that the tumour should be excised.

An incision was made from the outer canthus vertically upwards to the extent of about an inch, so as to liberate the upper eyelid, which was then dissected backwards. The tumour was found to pass to the bottom of the socket and under the optic nerve, with firm attachments to the eyeball, nerve, and periosteum, so that it became indispensable to remove the whole con-

tents of the orbit. The tumour was about the size of a pigeon's egg. During the first four days after the operation she continued pretty well, with the exception of headache and occasional restlessness—the pulse about 90, and of moderate strength. On the evening of the fourth day the headache and restlessness increased, and she became delirious. Symptoms of opisthotonos, though not very strongly marked, supervened. On the fifth day she was almost insensible; there was constant subsultus tendinum, the pulse 120, weak and intermittent, and the extremities cold. She gradually passed into a state of complete coma, and expired.

Sectio cadaveris.—Old adhesions existed between dura mater and anterior part of frontal bone. The surface of the arachnoid was covered with purulent matter; the vessels of the anterior part of the arachnoid membrane injected. Purulent matter was also found in the sub-arachnoid cellular tissue, at the posterior part of the vermiform process, and on the upper surface of the right orbital plate of the frontal bone, which bone was translucent, and not thicker than writing-paper. The substance of the brain was healthy. On making a section of the tumour it was found to be somewhat fibrous in its texture, and to present the characters of the carcinoma fasciculatum (Fig. 18).

The tumour removed from this patient twenty-two years prior to the second operation appears to have been of a simple fibrous structure; and it is not improbable that the basis of the second tumour was of the same nature, but that, occurring at a later period of life, and the system in a condition disposed to carcinomatous deposits, it presented the fibrous structure, and the characters of the carcinoma fasciculatum (Fig. 17).

This case exemplifies also the fact that the optic nerve bears a considerable degree of extension and twisting without disturbance of its functions, the eyeball having not only been protruded forwards and downwards, but turned considerably outwards from the proper axis, and the powers of vision remaining entire.

This case also shows the insidious manner in which inflammation of the brain or its membranes may creep on. The inflammation does not appear to have extended from the orbit along the course of the optic nerve, as the membranes investing it presented a perfectly healthy and natural appearance. It is the only case in my practice in which the operation appears to have been the cause of the fatal result. The existence of old adhesions between the dura mater and anterior part of the frontal bone, shows that the patient had previously suffered under inflammatory affections of these parts, which would give rise to a greater liability to their recurrence on the application of an exciting cause.

Robert Wilson, æt. sixty. In 1837 this patient received a se-

vere blow on the eye from the fist of his antagonist in a scuffle. The inflammation which followed required general and local depletion. In June 1838, three benign polypi were removed from the nostril next the affected eyeball by Dr Skae of Leven. The eye, at that time, presented the appearance of being slightly protruded. The orbital contents continued to augment in bulk, accompanied by considerable pain. In October of the same year he placed himself under my care. Nearly one-half of the eye was projected beyond the socket by a tumour of soft consistence attached deep in the socket. The conjunctiva was of a uniform red colour. The cornea was transparent, and the contents of the eyeball in their natural condition, but the power of vision was lost. He complained of constant uneasiness in the part, and of frequent lancinating pains. His sleep was restless, appetite impaired, and he had been rapidly losing flesh and strength. His countenance presented an anxious expression, and the skin that peculiar leaden yellow hue so frequently seen in patients labouring under carcinomatous disease. I excised the contents of the orbit, and the patient made a good recovery, and returned to Fife.

In the following summer (1839), there was an offensive sanious discharge, in considerable quantity, with constant pain in the back part of the orbit, great emaciation, quick small pulse, and much general debility. The eyelids were so contracted and puckered round the orbit, and the attempt to separate them gave so much suffering, that the bottom of the cavity could not be examined. On the 9th of August he had an apoplectic seizure, from which he recovered; but on the 25th of the same month he became comatose, and died on the 31st.

On examining the parts after operation (Fig. 17), a tumour one-half larger than the eyeball was found adhering loosely to that organ by fine areolar texture. At one spot opposite the annular ligament, it was attached to the sclerotic somewhat more firmly than elsewhere, but it had no intimate connexion with that membrane. The mass resembled medullary sarcoma in its lobulated configuration. In its intimate structure, especially externally, it approaches carcinoma alveolare; in other parts, carcinoma simplex.

From what has been stated it will appear that melanosis ought not to be classed as a species of carcinoma, or even as a malignant affection, and that when so situated that the whole mass may be removed by the knife, it is a curable disease.

That scirrhus of the eyelids is, like the same disease occurring in the lip, curable by the knife, provided all the parts involved be removed.

Of the other species of carcinoma seven cases are related. In two of these the operation of excision was successful; the

one presenting the characters of carcinoma fasciculatum, and situated within the eyeball, the other of medullary sarcoma with spherical cells, situated between the sclerotic and conjunctiva,—the one patient being fifty-six, the other sixty years of age.

The operations for the cure of such cases have been so universally unsuccessful that I would have been disposed to think that I had been deceived as to the true character of the affection in these two instances of a successful result, were it not that the diseased structures were minutely examined by so distinguished a pathologist and careful observer as Mr Goodsir, and that the cases differed from almost all those on record, in occurring in individuals somewhat advanced in life, instead of in infancy. Is it possible that when carcinoma shows itself at an early period of life, it indicates in a higher degree a constitutional taint and less of a local origin?

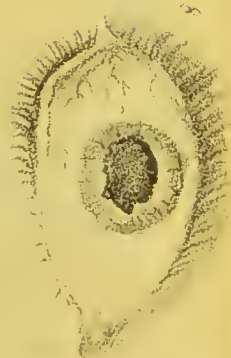
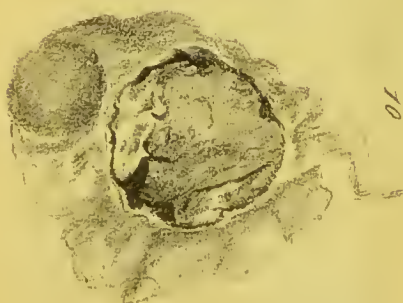
I must, in conclusion, express my deep obligations to my friend Mr Jehn Goodsir, the distinguished conservator of the University Museum, for examining and submitting to the microscope the various preparations, and to my talented colleague Dr Skae, lecturer on anatomy, for the beautiful plates by which the subject is illustrated.

Diagnosis.

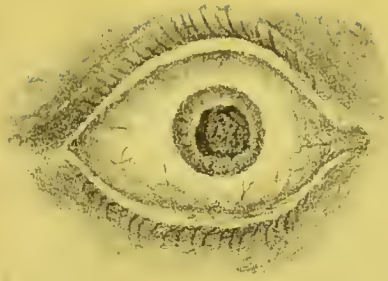
ENCEPHALOID.	SCIRRHUS (<i>as in common cancer of mamma.</i>)	MELANOSIS.
Of consistence of brain in thin cellular septa. Of an opaque white colour.	Of firm consistence in cellular-fibrous septa. Semi-transparent bluish-yellow colour.	Of soft consistence in thin cellular septa. Black or sepia colour.
Numerous minute vessels.	Sparingly supplied with blood-vessels.	No blood-vessels have been traced.
Consists of globules and caudate corpuscles.	Nuclear cells. No caudate corpuscles.	Pigment cells—round, oval, or irregular, and sometimes caudate.
May become of enormous bulk. Often of rapid growth. Often interstitial effusion of blood.	Seldom of large size. Progress generally slow. Rarely interstitial hemorrhage.	They attain a large size. Growth of variable rapidity. Never interstitial hemorrhage.
Not disposed to form adhesions to surrounding parts.	Becomes firmly connected with surrounding parts.	Not disposed to form adhesions to surrounding parts.
When subcutaneous, the skin is distended and stretched, and gives way usually by simple ulceration.	The skin becomes puckered and assumes the cancerous ulceration.	The skin becomes stretched and distended, and yields by simple ulceration.
After ulceration, rapid progress, and often large fungous growths, and frequently hemorrhage.	After ulceration progress not so rapid, and seldom profuse hemorrhage, provided it does not assume the encephaloid structure.	After ulceration progress of tumour more rapid—no hemorrhage.
This species of carcinoma most frequently met with in infancy and youth.	Most common in advanced life.	Usually about or after middle age.
Liable to be propagated through the absorbent organs.	Even more liable to be propagated through the absorbent organs.	No tendency to be propagated through the absorbent organs.

EXPLANATION OF FIGURES.

Figs. 8, 9, 10, and 11, all refer to the case of Elizabeth Williamson, æt. eight,—disease, medullary carcinoma in the interior of the eyeball. Fig. 8 shows the appearance of the disease in its early stage, when the humours



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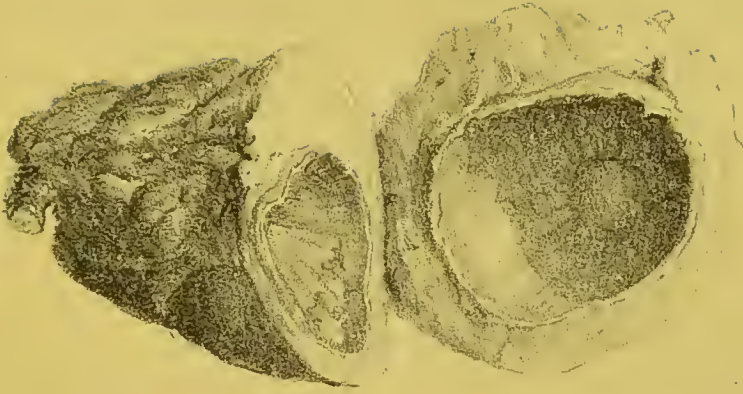
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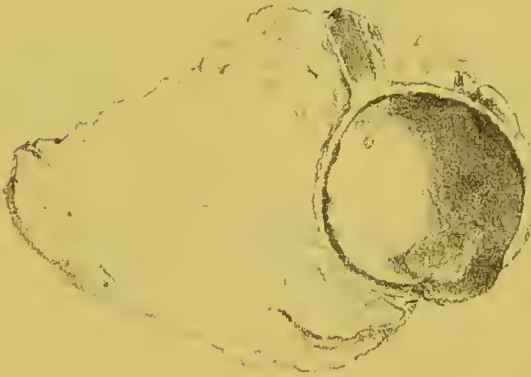
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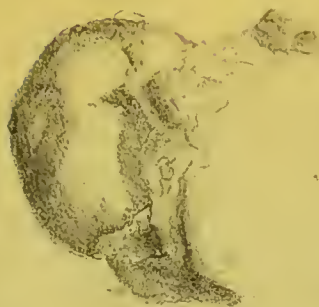
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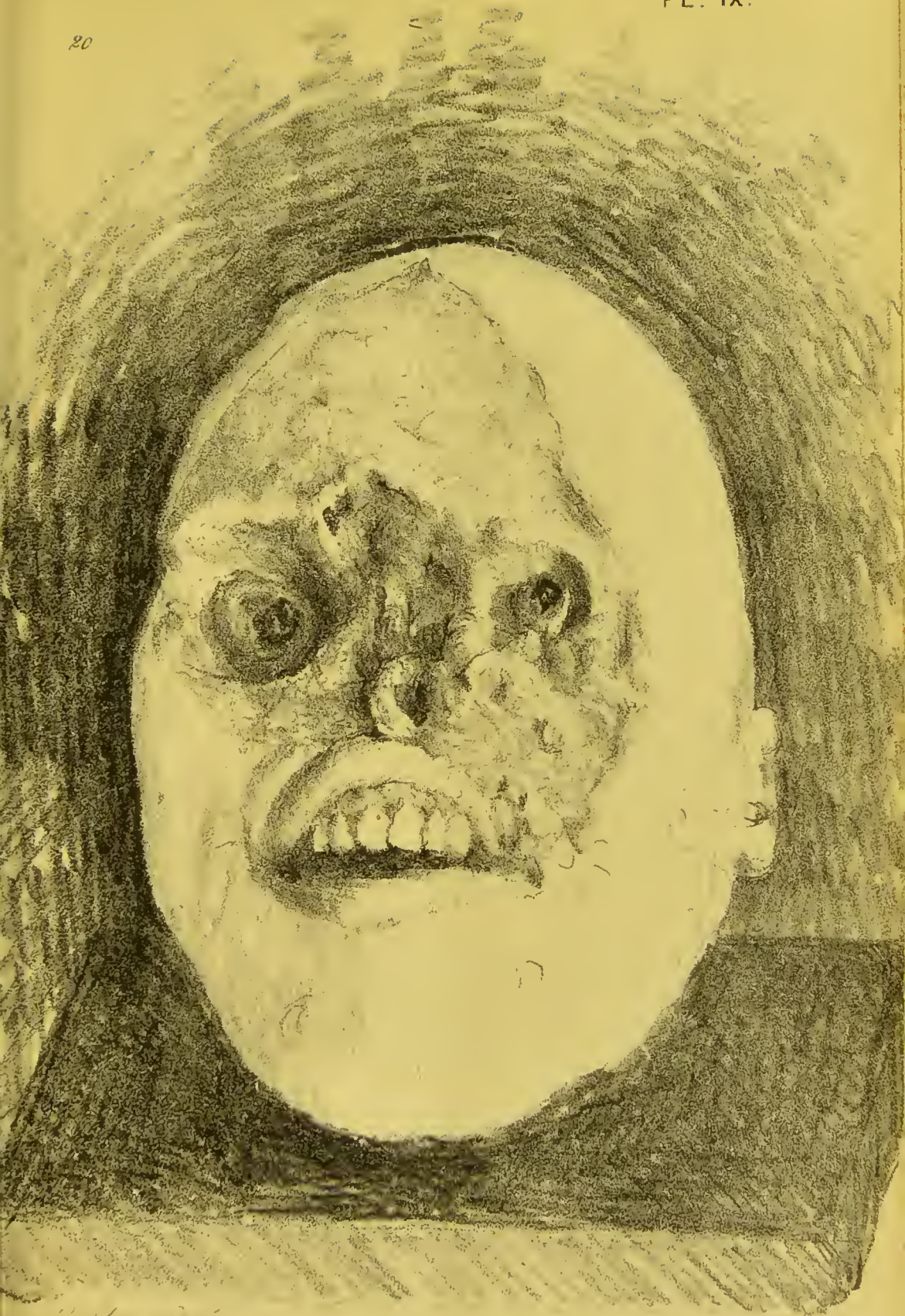


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of the eye are still transparent, and when the peculiar metallic glistening is seen deeply seated in the eye. The iris also is irregular in form and immoveable. At this period I proposed operating, but the parents refused their consent.

Fig. 9. This drawing was taken three months after the former, and the day prior to the excision of the eyeball. The cornea is now somewhat opaque, the lens and iris pushed closely into contact with its internal surface, the vessels of the conjunctiva and sclerotic injected, the eyeball partially protruded, and considerable œdema of the eyelids.

Fig. 10 shows a section of the eyeball. The greater part of the posterior chamber is occupied by a tumour presenting all the characters of medullary carcinoma, supplied with numerous small vessels, and having spherical cells.

Fig. 11 shows the appearance presented three months after the operation, and a few days before the death of the patient. During the first fortnight after the operation all appeared to be going on favourably. The granulations then became pale-coloured, loose, and flabby; a fetid thin discharge took place, occasionally tinged with blood. The socket was gradually filled up by a fungoid mass of soft consistence and very vascular; the discharge augmented in quantity, the bleedings became more frequent, and the child sunk exhausted.

Figs. 12 and 13. Fig. 12 shows appearances similar to Fig. 8, viz., those which characterize the early stage of medullary carcinoma within the eyeball. No operation was performed. The patient was again brought to me after the lapse of two years, with an enormous tumour of soft consistence projecting from the orbit (Fig. 13). The discharge was small in quantity, very rarely tinged with blood, and he suffered little pain. His general health, however, was rapidly failing. I learned that the eye had given way about six months previously, and that the tumour had gradually attained its present bulk. The patient died exhausted about two months after the drawing was taken.

Figs. 14 and 15 refer to the case of Mrs Walker, æt. sixty-two, whose case has already been detailed. It will be perceived that the entire mass is altogether external to the eyeball. It consists of medullary carcinoma, with spherical cells. This patient recovered.

Fig. 16 shows the section of the eyeball, after excision, of John Graham, æt. fifty-six, whose case is already related. The mass occupies the cavity of the eyeball, and projects through the cornea. When submitted to the microscope, it shows all the characters of carcinoma fasciculatum, presenting neither cellular globules nor caudate corpuscles, but consisting of tufts of fibres running in a divergent course. This patient also recovered.

Fig. 17. Section of eyeball of Robert Wilson, æt. sixty, whose case has also already been detailed. The tumour adheres loosely by fine areolar texture to the external surface of the sclerotic. Its texture is somewhat anomalous. It resembles medullary sarcoma in its lobulated configuration, but not in its intimate structure, which in some places, especially externally, approaches carcinoma alveolare, in other carcinoma simplex.

Fig. 18. Grizzel Syme, æt. sixty. Her case has already been related. The tumour is attached loosely to the external surface of the sclerotic by fine areolar tissue. The texture is somewhat fibrous, but not a pure fibrous tumour, probably a form of carcinoma fasciculatum.

Fig. 19 shows the appearance of medullary carcinoma involving the orbit, frontal sinuses, antrum maxillare, and the cavity of the nose.

Fig. 20 shows the most advanced stage of carcinoma commencing in the eyelid. The disease commenced in the form of a small warty excrescence on the lower eyelid twenty-two years ago. The patient died exhausted. The only period at which his sufferings were acute was when the disease extended to the eyeballs, and before these organs had given way and allowed of the escape of their contents. The sclerotic coats could be distinctly traced at the period of his death, showing how little this structure is disposed to assume the cancerous degeneration.

58, QUEEN STREET, EDINBURGH,
15th October 1844.

